

Commonwealth of Kentucky
Division for Air Quality
PERMIT STATEMENT OF BASIS

DRAFT

Conditional Major, Construction / Operating

Permit: F-08-022

Givaudan Flavors Corporation

Florence, KY 41042

June 10, 2008

Ron Schneider, Reviewer

SOURCE ID: 21-015-00150

AGENCY INTEREST: 4590

ACTIVITY: APE20080002, APE20080003

SOURCE DESCRIPTION:

Givaudan Flavors Corporation manufactures meat and other type flavors for the food industry. The Givaudan operation in Florence, Kentucky is similar to the processes now in operation at their Cincinnati facility.

PROPOSED REVISIONS

APE20080002 – On March 10, 2008, Givaudan Flavors Corporation submitted an application to increase throughputs for emission points 01(P01) – 05(P05). The increased throughputs would cause the source's potential to emit (PTE) for particulate matter to exceed 100 tons per year (TPY), making the source no longer eligible for a state-origin permit.

The source had proposed that it remain a state-origin source under 401 KAR 52:080, but the Division denied the request in a letter dated March 12, 2008, since the Division is preparing to repeal 401 KAR 52:080. Givaudan resubmitted the application on April 23, 2008 as an application for a conditional major permit.

The proposed increases for maximum product throughputs are as follows: for 01(P01), from 0.5 tons/hr to 0.6tons/hr; for 02(P02), 0.53 tons/hr to 4.5 tons/hr; for 03(P03) and 04(P04), 2.65 tons/hr to 4.5 tons/hr; for 05(P05), 2.65 tons/hr to 9.00 tons/hr.

APE20080003

This conditional major permit also incorporates an application, received May 6, 2008, to install two new pollutant sources as follows:

07(P07) – A 2,700 lb/hr spray dryer (#1 Spray Dryer) and other associated equipment – The spray dryer will be equipped with a scrubber demister for particulate control and will be exhausted through the existing thermal oxidizer for odor control. The dryer system also includes a drying air fan, product cooling fan, an exhaust fan, and an indirect heater and dehumidifier for the drying air stream.

08(P08) – A batching system to feed the spray dryer – The batching system will consist of two super

sack dispensing stations, a tote dispensing station, a maltodextrin receiver, and a manual dump station. A dust collector will be used to control emissions from the batching system. The batching system feeds either the batch tank or hold tank, both of which will also be vented to the dust collector to allow for the manual addition of dry materials to either of those tanks.

COMMENTS:

A mass balance on a similar unit was used to develop the emission factor for the spray dryer. A spray tower and mist eliminator will be used to control PM with an expected efficiency of 94%. Water is introduced into the control system through atomizing spray nozzles positioned in air ducts after the exhaust fans. The water laden air flows through a mesh pad, a perforated plate and demister style plates which separates the water and powder droplets for the exhaust air stream. The water is discharged to a balance tank where the water is recirculated back into the system. To control solids level of the water in the tank, an automatically controlled discharge valve is opened and clean water is added to the system.

A mass balance on a similar unit was also used to determine the emission factor for the batching system. A dust collector will be used for particulate control.

401 KAR 59:010 applies to emissions from both units. Because the projected controlled emissions from the spray dryer are calculated to be very close to the limit prescribed by 59:010, stack testing by Method 5 is being required.

EXISTING EQUIPMENT

01(P01) Filtermat Spray/Belt Dryer

Description:

The Filtermat spray dryer will dry moist sticky, hygroscopic, thermoplastic and slowly crystallizing products into free flowing powders. The Filtermat spray dryer combines a co-current nozzle tower dryer with a built-in conveyor belt. The residence time for the powder as it travels through different zones is several minutes, offering sufficient time to complete drying while maintaining the required powder temperatures.

The Filtermat is designed as a two stage dryer. In the first stage, the liquid concentrate is pumped to a high-pressure nozzle assembly and sprayed into the drying chamber over the conveyor belt, co-current to the hot air introduced through the air disperser. This combined operation in the drying chamber directs the particles onto the conveyor belt to form a layer of partly dried agglomerated powder. In the second stage, the semi-dried powder layer travels through the secondary drying and cooling zones after which it falls off the belt to be milled/sieved prior to bagging. The drying air is exhausted through the powder layer and the belt to a cyclone separator for separating the powder fines from the exhaust air. The exhaust air is then processed through a wet scrubber/demister before exhausting it to a regenerative thermal oxidizer for odor control.

02(P02) Minor Source Ingredients - Nine (9) Supersack Minor Ingredient Bulk Unloaders

Description:

Nine bulk bag unloading stations will receive 2,000 bulk bags for two maltodextrins, hydrolyzed dextrose, sucrose, two HPP powders, chicken powders and two pre-blends (these systems are adaptable to handle any ingredients). The stations are equipped with pendant operated electric hoist and trolleys, air operated bag massagers, active feed device, dust collection piping and hood, material cut-off valve and deep reach magnetic trap.

03(P03) Three (3) Mixer/Blenders

Description:

Bulk ingredients are pneumatically conveyed from the silos to the selected scale hopper. Product and air are separated by a cyclone, and conveying air will be vented to the central dust collection system. Each bulk scale is equipped with an explosion vent and vent duct penetrating the building that can be cleaned and inspected during the cleaning process. During bulk ingredient scaling, the operator will position and prepare to dump minors and micro ingredients with the drum dumper and/or bag dumping station. As soon as the mixer charge permissive is established, the bulk scale discharge cycle will start. At this time the operator will commence loading of the mixer with ingredient drums and bags (the system will allow the operator to dump drums and bags simultaneously through drum dumping and bag dumping stations). Subsequently, any flavor oils will be introduced into the pressurized pot, or fats introduced by drum.

04(P04) Three (3) Post Blend Fillers

Description:

After mixing, the operator will initiate the mixer discharge cycle after empty containers are placed on the floor scales. Containers are moved by forklift to the packaging line container dumping area.

05(P05) Two (2) Packaging Lines

Description:

After containers are transferred to the packing surge bin area, the operator loads the appropriate container onto one of the two container dumpers. Containers are dumped into one of the two surge bins when a low level permissive indicates there is room for product. The surge bin capacity holds the contents of one container plus sufficient surge to prevent the packing machine from being starved during loading of the surge bin.

Description:

The cheese food process is a batch process consisting of six kettles and ten reactors for the manufacture of cheese food products. Bulk cheese is melted within the vessels; once melted small quantities of miscellaneous ingredients are added to the process vessel. The temperature of the vessel is raised for the remaining reaction step. Upon completion of the batch cycle, final product is transferred to final product packaging. A small 100 hp natural gas boiler supplies the heat for the cheese food process. Dependent upon the specific cheese food product, the batch process time ranges from a minimum of 10 hours per batch to a maximum of 80 hours per batch. Periodic cleaning/ sanitizing of the vessels is conducted using a chlorine-containing solution. On a weekly basis, fogging of the cheese food process area is conducted using Quaternary Ammonium. These cleaning and sanitizing steps are required to maintain a safe and sanitary food-processing environment in compliance with requirements of the Food and Drug Administration (FDA).

Emission factors and their source: Emission factors were based on AP-42, engineering evaluation, material balance, vendor, and consultant.

Applicable regulation(s) and calculated allowables (reference POC table):

401 KAR 59:010 *New Process Operations* constructed after July 2, 1975.

401 KAR 59:015 *New Indirect Heat Exchangers* is applicable to the indirect heat exchangers listed in Section C as insignificant emission units.

401 KAR 53:010 *Ambient Air Quality*, Appendix A (Odor), is applicable to the facility in general.

The following regulations were reviewed and determined not to apply for the reasons stated.

Since uncontrolled PM emissions are less than 250 TPY, Regulation 401 KAR 51:017, Prevention of Significant Deterioration (PSD) will not be applicable. The source is not subject to any 40 CFR 63 subparts, since HAP emissions are only from natural gas combustion and are minimal. No MACT regulations exist for the processes identified in the permit application.

Federal regulation 40 CFR 60, Subpart Kb is not applicable to the storage tanks identified in Section C as insignificant emission units due to material storage.

Emission and Operating Caps Description:

Givaudan has requested that all particulate control equipment at the source be listed as federally enforceable so that no production limits are necessary to achieve conditional major status.

Periodic Monitoring:

Refer to permit F-08-022, Section B, for specific monitoring requirements. Water flow rate readings are required daily for rotoclones and wet scrubber/demister. Opacity monitoring is required from each stack during malfunctions.

CREDIBLE EVIDENCE:

This permit contains provisions which require that specific test methods, monitoring or recordkeeping be used as a demonstration of compliance with permit limits. On February 24, 1997, the U.S. EPA promulgated revisions to the following federal regulations: 40 CFR Part 51, Sec. 51.212; 40 CFR Part 52, Sec. 52.12; 40 CFR Part 52, Sec. 52.30; 40 CFR Part 60, Sec. 60.11 and 40 CFR Part 61, Sec. 61.12, that allow the use of credible evidence to establish compliance with applicable requirements. At the issuance of this permit, Kentucky has only adopted the provisions of 40 CFR Part 60, Sec. 60.11 and 40 CFR Part 61, Sec. 61.12 into its air quality regulations.